MODEL D77
Controller

Installation, Operation, and Maintenance Manual

Read and save these instructions

driSteem

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Warnings and cautions

> ## ⚠ WARNING
>
> 1. Improper installation may cause property damage or injury. Installation, service, and maintenance must be performed by a qualified service technician.
>
> 2. Line voltage may cause serious injury from electric shock. Disconnect electrical power before starting installation or servicing. Leave power disconnected until installation/service is completed. This control is not a 120 Volt (line voltage) device.

> ## ⚠ CAUTION
>
> 1. Read all instructions before beginning installation.
>
> 2. Do not use in pool applications. Pool chemicals can damage the control.
>
> 3. Do not use solvents or cleaners on or near the display and circuit board. Chemicals can damage components.

Fill in the following information for your records

Date of purchase   _____

Customer's name   _____

Model number   _____

Serial number   _____

Overview and specifications

OVERVIEW

The control allows the user to set and adjust the humidity setting and turn dehumidification on or off from a convenient location. In this application, the Model D77 uses an onboard sensor to monitor the relative humidity (%RH) in the space in which it is located and displays the measured relative humidity on the digital display.

| Table 4-1: D77 controller specifications	
Electrical	
Input	Voltage: 24VAC +/-20% Current: 25mA (nominal), 50mA (max.) at 24VAC
Output	Dry Contact, Normally Open
Control	
Control Range	35% – 80% RH
Accuracy	+/-5% RH
Differential	3%
Low Limit	40°F (4°C) Dew Point
High Limit	99°F (37°C) Dry Bulb

Mount control

- In the area where moisture levels need to be monitored and controlled.

- On an interior wall.

- At least 18" from an outside wall.

DO NOT MOUNT CONTROL
- **In the flow of a supply register.**

- Behind doors, in corners or other dead air spaces.

- In direct sunlight, near lighting fixtures, or other appliances that give off heat.

- On an outside or unconditioned area wall.

- In stairwells or near outside doors.
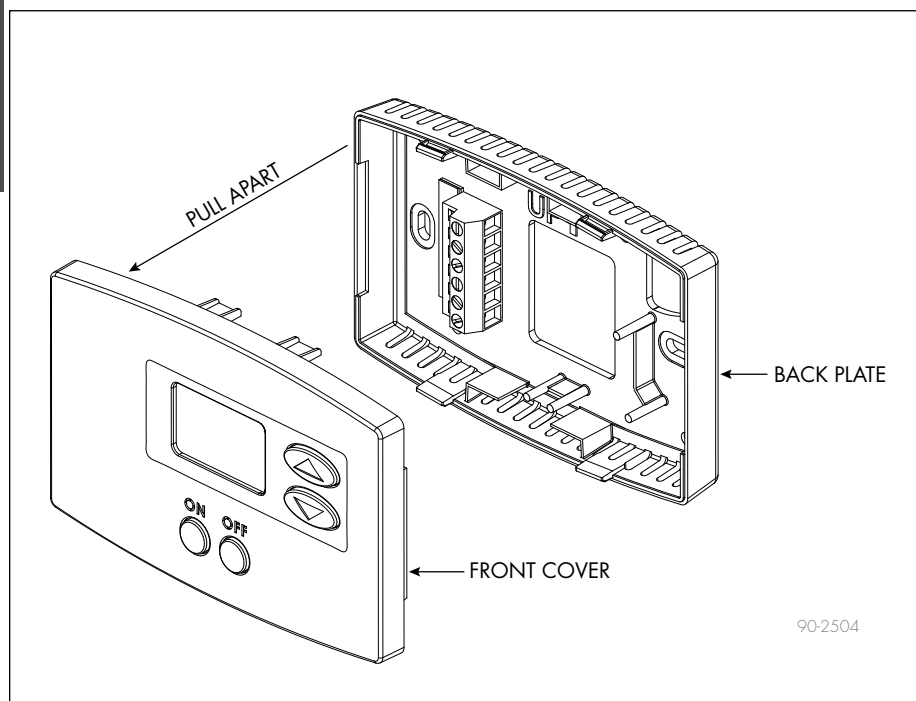
- On a wall with concealed pipes or ductwork.
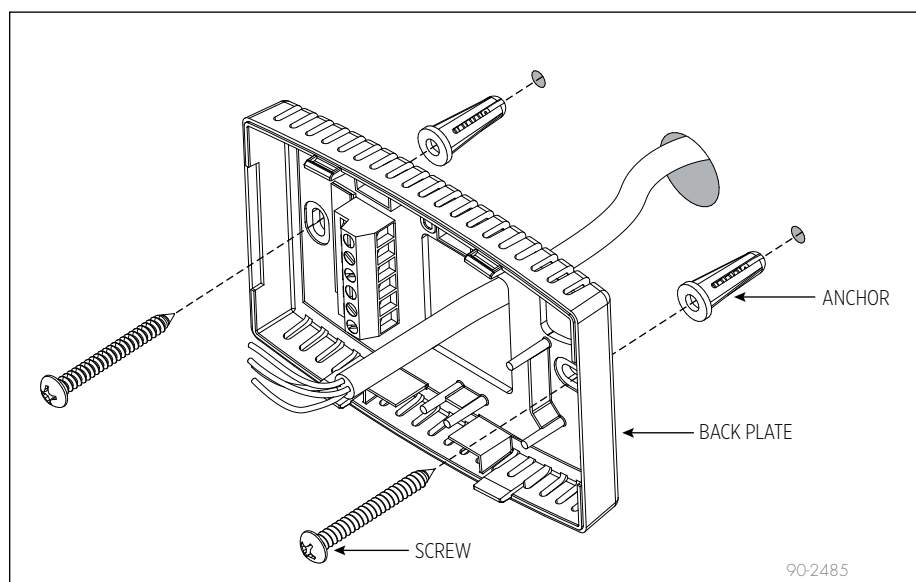
FIGURE 5-1: MOUNTING LOCATION
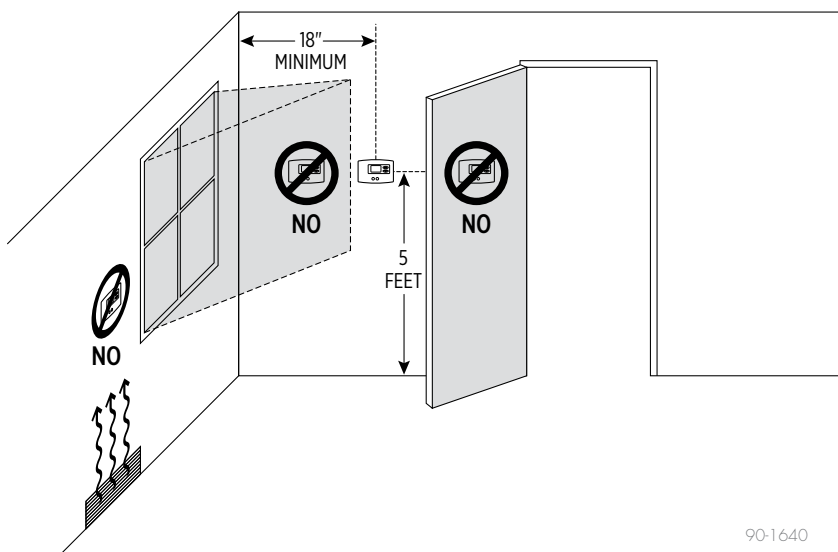
90-1640

Mount control

FIGURE 6-1: DISASSEMBLE CONTROL

PULL APART

BACK PLATE

FRONT COVER

90-2504

**FIGURE 6-2: MOUNT BACK PLATE**

ANCHOR

BACK PLATE

SCREW

90-2485

Required components

- 18-22 gauge wire (field supplied), 4 wires required, run new cable as needed.

- (2) #8 x 1-1/2" mounting screws (supplied)

- (2) Anchors (supplied)

1. Level the back plate on the wall and mark the mounting holes and wire access location on the wall.

2. Drill two 3/16" mounting holes and a 3/4" wire access hole. See Figure 6.

3. Install the drywall anchors flush with the wall surface.
   Note: Mounting holes on the back plate are designed to fit on a horizontal J-box.

4. Run a 4-wire cable from the dehumidifier to the wall mount location and through the square hole in the back plate.

5. Secure the back plate to the wall using the two #8 x 1-1/2" screws.

INSTALLATION

Wiring D77 with DriSteem dehumidifiers

1. Disconnect power to the dehumidifier and HVAC system.

2. Remove the wiring access cover next to the control on the dehumidifier.

3. Wire the Model D77 to the dehumidifier as shown in Figure 8-1.

**FIGURE 8-1: MODEL D77 WIRING WITH DRISTEEM DEHUMIDIFIERS**
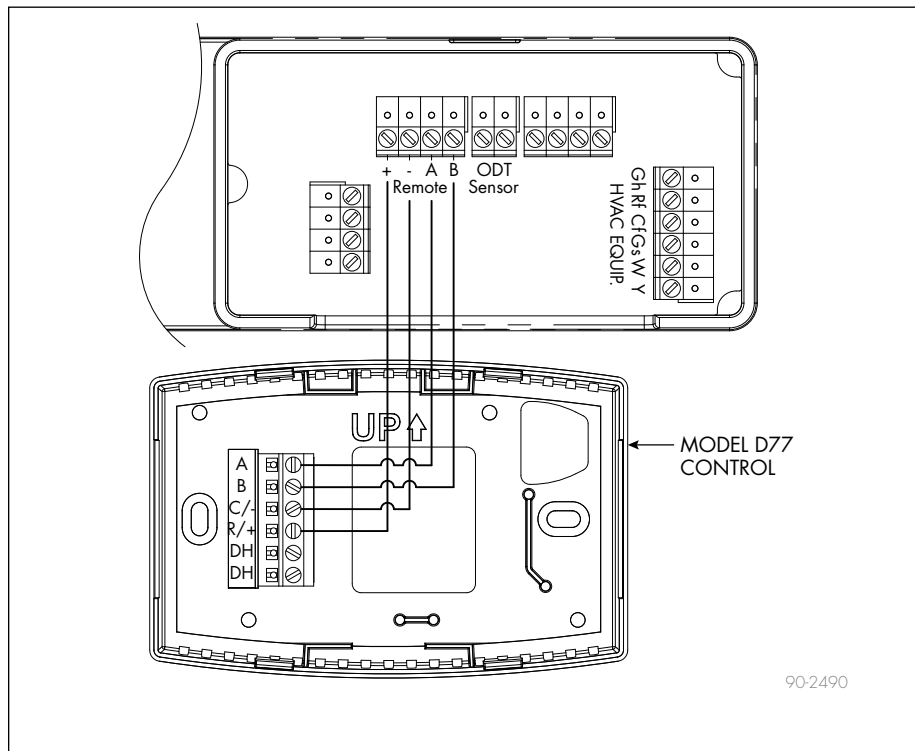
Wiring D77 with Dristeem Dehumidifiers

4. Snap the wiring access cover back into place, power up the dehumidifier and use the ON/OFF button to turn the unit OFF (if ON). See Figure 9-1.

5. Press and hold the MODE button for 3 seconds to enter the Installer Set Up menu. **REMOTE DISABLED** will appear on the display when Installer Set Up is entered.

6. Press the ▲ or ▼ button to change to **REMOTE ENABLED**.

7. Repeatedly press the MODE button until DONE appears on the display.

FIGURE 9-1:

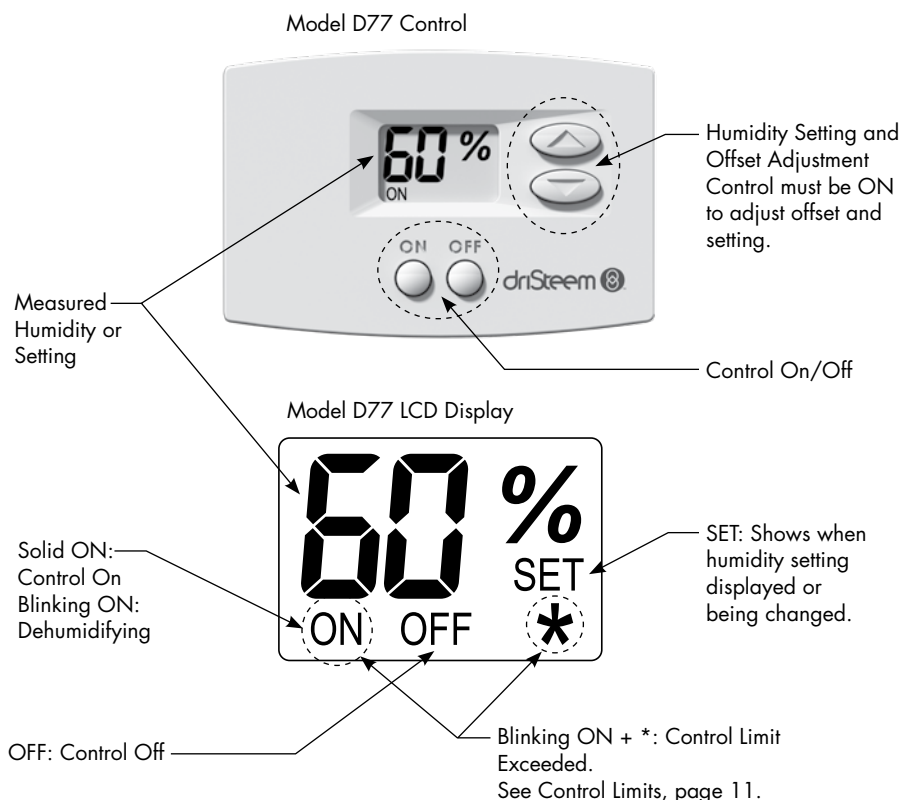

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FIGURE 9-2:

90-1854
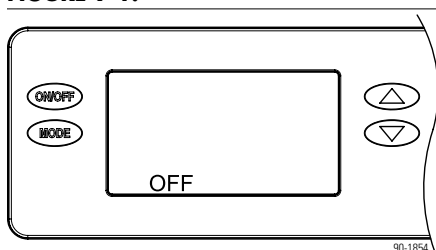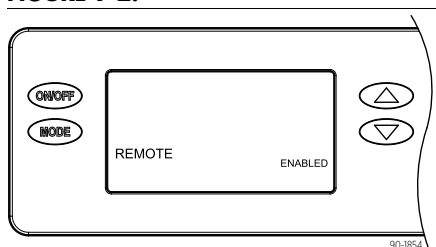
System checkout

POWER UP

1. Check all wiring.

2. Plug in dehumidifier and restore power to the HVAC system.

3. Turn on/off switch on dehumidifier ON. After a 4 second start up sequence all buttons on the Model D77 will be functional.

   • The control will be OFF.

   • The humidity setting will be 60%.

   • The control will display the measured humidity.

FIGURE 10-1: EXTERNAL CONTROL

Model D77 Control

Humidity Setting and Offset Adjustment Control must be ON to adjust offset and setting.

Measured Humidity or Setting

Control On/Off

Model D77 LCD Display

Solid ON: Control On
Blinking ON: Dehumidifying

SET: Shows when humidity setting displayed or being changed.

OFF: Control Off

Blinking ON + *: Control Limit Exceeded.
See Control Limits, page 11.

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System checkout

TEST MODE

1. Press and hold the ON button for 5 seconds to enter Test Mode.
   a. Verify the measured humidity is displayed on the Model D77 screen.
   b. Verify ON blinks on the Model D77 screen.
2. After 5 minutes or after pressing the OFF button, the control will enter Off mode.
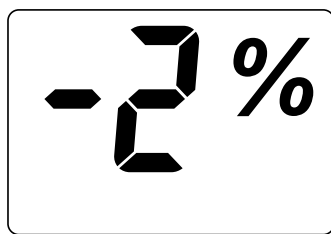   a. Verify the dehumidifier turns off.

HUMIDITY SETTING

- The control must be ON to adjust the humidity setting.

- The ▲ (up) and ▼ (down) buttons are used to increase or decrease the setting.

- The first press of either button will display the current setting and **SET** on the LCD display.

- Each subsequent push of the ▲ or ▼ button will change the setting by 1% RH.

- If a button is held down, the setting will continually change by 1% every 1/2 second for as long as the button is pressed.

- The control will return to Normal Mode, displaying the measured humidity, 5 seconds after the last button press/release.

OFFSET

An offset can be applied to the humidity reading to avoid discrepancies with other humidity measuring devices. Allow 48 hours for the control to acclimate before applying an offset. The control must be ON to enter the Offset screen.

- Press and hold the OFF button for 5 seconds to enter the Offset screen.

- The ▲▼ buttons can be used to set an offset value between -5% RH and +5% RH.

- The control will return to Normal Mode, displaying the measured humidity, 5 seconds after the last button press/release.

FIGURE 11-1:

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OPERATION

System checkout

TURING ON AND SETTING THE CONTROL

1. Press the ON button on the dehumidifier user interface and on the Model D77 control.

2. Use the ▲▼ buttons to set the control at the desired humidity level.

   ▲ Increasing the humidity setting will decrease dehumidifier run time, allowing for higher humidity levels.

   ▼ Decreasing the humidity setting will increase dehumidifier run time, allowing for lower humidity levels.

SEQUENCE OF OPERATION

NORMAL MODE

- When the measured humidity is greater than the setting, the control will activate the dehumidifier output, the dehumidifier will begin dehumidifying and **ON** will blink on the LCD display.

- When the measured humidity falls 3% below the setting, the control will deactivate the dehumidifier output, the dehumidifier will stop dehumidifying and the LCD will display a solid **ON**.

CONTROL LIMITS

- If the control measures a dew point below 40°F (4°C) OR a temperature above 99°F (37°C), the control will deactivate the dehumidifier output if actively dehumidifying, the dehumidifier will stop dehumidifying, and **ON** and * will blink on the LCD screen.

- The control will resume normal operation when the measured dew point is greater than 45°F (7°C) or the measured temperature is below 94°F (34°C), whichever control limit was exceeded.

Error Codes

Use the guide on the following page to help find and correct system faults. Contact Technical Support before replacing the control or for additional troubleshooting. Technical Support is available Monday through Friday, 7:00 a.m. to 5:00 p.m. CST, at (800) 328-4447.

When the control detects an internal error, it will stop controlling, deactivate the dehumidifier output, and the LCD will display the Error Code. See Figure 13-1. The control will attempt to recover from the error every 10 minutes. The Error Code will continue to be displayed as long as the error condition exists. Button presses are not registered when in Error Mode. Cycling power to the control will not clear the code and the control will need to be replaced.

DEHUMIDIFIER DIAGNOSTIC CODES
When a dehumidifier error occurs, the diagnostic code will be displayed on the D77 screen.

FIGURE 13-1: ERROR CODE SCREEN

90-1636

Model D77 troubleshooting guide

Table 14-1: D77 Troubleshooting Guide

Symptom	Possible Reason	Troubleshooting Procedure
No power to the control.	Incorrect wiring.	Verify wiring connections between control, dehumidifier and HVAC system (where applicable).
	No power to dehumidifier.	• Verify that the dehumidifier power switch is ON. • Verify the circuit breaker has not tripped.
	No power to HVAC equipment.	• Verify HVAC system switch is on. • Verify the circuit breaker has not tripped.
Control does not turn on dehumidifier output.	Incorrect wiring.	Verify wiring connections between control and dehumidifier.
Blank display or missing segments during Test mode.	LCD error.	Replace control.
Display shows Er.	Control detected an internal error.	The control will need to be replaced.
Inaccurate humidity reading.	Control recently installed after being stored in an uncontrolled temperature and humidity environment.	Allow 48 hours for control to acclimate.
	Offset has been applied to the humidity reading.	Change the offset.
	Control is mounted in direct sunlight, above a heat or humidity source, or in the path of a supply register.	Relocate the control.

RL-31 dehumidifier diagnostic codes

Code	Failure Mode	Action	Reset
Table 15-1: DEHUMIDIFIER Diagnostic Codes			
E1	Internal Humidity or Temperature Sensor Open or Shorted	• If connection okay, replace User Interface.	Cycle Power
E3	Model D77 Remote Control Communication Loss	Check connections between Model D77 and dehumidifier control board. Terminals should be fully inserted and secured in the control board and Model D77 control terminals. • If connections are correct and secure, turn off the dehumidifier and remove the Model D77. Use a short section of 4-wire cable to reconnect the Model D77 to the control board. Turn the dehumidifier back on and increase the dryness level setting on the Model D77. If the dehumidifier turns on, the problem is with the wiring between the dehumidifier and control. • If the dehumidifier does not turn on, call Technical Support.	Self-Correcting
E4	Insufficient Capacity	Check the frost sensor connection at the power board. Terminal should be fully seated on the power board pins. • Remove the side access panel and verify that the sensor is secured to the suction line. • If the sensor is connected and secured to the refrigeration line proceed to the next step. • Reset the fault by cycling power to the dehumidifier. • Turn the humidity setting down (below room/home humidity level) to make a dehumidification call. • Allow the fan and compressor to run for approximately 10-15 minutes and then enter diagnostic test mode by simultaneously pressing the UP ARROW and MODE buttons for 3 seconds. The LCD will display the temperature measured by the internal sensor while also displaying AIR SAMPLING and ON, the humidity measured by the internal sensor while also displaying %RH and ON, and the frost sensor temperature while also displaying ON. Scroll through these values and by using the UP/DOWN arrow buttons. • Record values and call Technical Support.	Cycle Power

RL-31 dehumidifier diagnostic codes

E5	High Temperature Thermistor Failure	Check the high temperature sensor connection at the power board. Terminal should be fully seated on the power board pins. • Remove the side access panel and verify the sensor is not damaged and connected to the refrigeration line coming from the compressor. • If the sensor is connected and secured to the refrigeration line, it may need to be replaced. Contact Technical Support to confirm.	Cycle Power
E6	Low Temperature Thermistor Failure	Check the low temperature sensor connection at the power board. • Remove the side access panel and verify the sensor is not damaged and connected to the suction line. • If the sensor is connected and secured to the refrigeration line, it may need to be replaced. Contact Technical Support to confirm.	Self-Correcting
E7	Float Switch Open	Empty the condensate pan. • Check the float switch connection at the control board. • If not using a float switch, verify jumper is between float switch terminals on dehumidifier control board. • If the problem persists, replace the float switch.	Self-Correcting
E8	Inlet Air Temperature Out of 50°F – 104°F (10 - 10°C) Range or Dew Point Below 36°F (2°C)	Verify all ductwork is properly sealed. • If no signs of leak points, contact Technical Support.	Self-Correcting
E9	Fan or Compressor Fault	Cycle power. If problem persists, contact Technical Support.	Cycle Power

TWO-YEAR LIMITED WARRANTY

DRI-STEEM Corporation ("DriSteem") warrants to the original user that its products will be free from defects in materials and workmanship for a period of two (2) years after installation or twenty-seven (27) months from the date DriSteem ships such product, whichever date is the earlier. If any DriSteem product is found to be defective in material or workmanship during the applicable warranty period, DriSteem's entire liability, and the purchaser's sole and exclusive remedy, shall be the repair or replacement of the defective product, or the refund of the purchase price, at DriSteem's election. DriSteem shall not be liable for any costs or expenses, whether direct or indirect, associated with the installation, removal or reinstallation of any defective product. The Limited Warranty does not include cylinder replacement for electrode steam humidifiers or media replacement for Wetted Media Systems.

DriSteem's Limited Warranty shall not be effective or actionable unless there is compliance with all installation and operating instructions furnished by DriSteem, or if the products have been modified or altered without the written consent of DriSteem, or if such products have been subject to accident, misuse, mishandling, tampering, negligence or improper maintenance. Any warranty claim must be submitted to DriSteem in writing within the stated warranty period. Defective parts may be required to be returned to DriSteem. Excluded from the Limited Warranty are all consumable and wear and tear items such as cylinders, membranes, filters, or media replacements. These items are subject to usual wear and tear during usage.

DriSteem's Limited Warranty is made in lieu of, and DriSteem disclaims all other warranties, whether express or implied, including but not limited to any IMPLIED WARRANTY OF MERCHANTABILITY, ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, any implied warranty arising out of a course of dealing or of performance, custom or usage of trade. DriSteem SHALL NOT, UNDER ANY CIRCUMSTANCES BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS, REVENUE OR BUSINESS) OR DAMAGE OR INJURY TO PERSONS OR PROPERTY IN ANY WAY RELATED TO THE MANUFACTURE OR THE USE OF ITS PRODUCTS. The exclusion applies regardless of whether such damages are sought based on breach of warranty, breach of contract, negligence, strict liability in tort, or any other legal theory, even if DriSteem has notice of the possibility of such damages.

By purchasing DriSteem's products, the purchaser agrees to the terms and conditions of this Limited Warranty.

EXTENDED WARRANTY

The original user may extend the term of the DriSteem Limited Warranty for a limited number of months past the initial applicable warranty period and term provided in the first paragraph of this Limited Warranty. All the terms and conditions of the Limited Warranty during the initial applicable warranty period and term shall apply during any extended term. An extended warranty term of an additional twelve (12) months or twenty four (24) months of coverage may be purchased. The extended warranty term may be purchased until eighteen (18) months after the product is shipped, after which time no extended warranties are available.

Any extension of the Limited Warranty under this program must be in writing, signed by DriSteem, and paid for in full by the purchaser.

Expect quality from the industry leader

Since 1965, DriSteem has led the industry with innovative methods for humidifying and cooling air with precise control. Our focus on ease of ownership is evident in the design of the GTS humidifier, which features cleanable, stainless steel construction. DriSteem also leads the industry with a Two-year Limited Warranty and optional extended warranty.

For more information
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sales@dristeem.com

For the most recent product information visit our website: www.dristeem.com

Continuous product improvement is a policy of DriSteem; therefore, product features and specifications are subject to change without notice.